Instructions

Dyna-Star® HP and HF Pump AC to DC Conversion Kit

333391B

EN

Kit to convert an AC Power Source to a DC Power Source. For use with the Electric Dyna-Star HP and HF Pump only. Not approved for outdoor use. For professional use only.

Not approved for use in explosive atmospheres or hazardous locations.

Part No.: 77X524

Important Safety Instructions

Read all warnings and instructions in this manual and in the Dyna-Star HP and HF Pump instruction manual. Save all instructions.

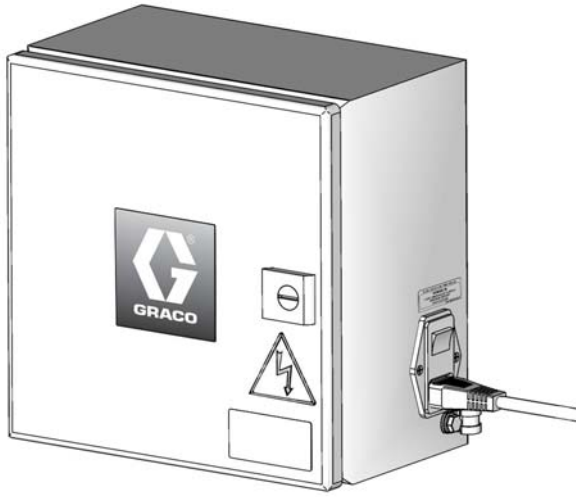


Table of Contents

Warnings **2**
Typical Installation **3**
Installation **4**
Dyna-Star Pump Current Control Adjustment 4
Enclosure Preparation 5
Controller Cord Grip Installation 5
Pressure Switch Cord Grip 5
Electric Dyna-Star Cord Grip 6
Controller Installation 6
GLC2200 6
GLC2200 Installation 7
Installing Enclosure to Mounting Surface 7
Fuse Installation 7
Fuses 7
Connecting Power Supply 9
System Configuration and Wiring 9
Instructions 9
Dyna-Star Pump Connections 9
Controller Connection 10
LEVER-NUTS® 10
Installing Power Cord Clamp 10
Installing Power Cord 12
Kit 77X524 Parts **13**
Enclosure Parts 13
Kit 77X524 Inside Enclosure Parts 14
Technical Data **15**
Enclosure Mounting Dimensions 15
Cord Grip/Cable Gland Dimensions 16
Bottom View 16
Side View 16
Notes **17**
Graco Standard Warranty **18**

CE

Warnings

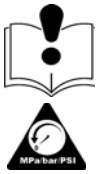
The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠WARNING

ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment.
- Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

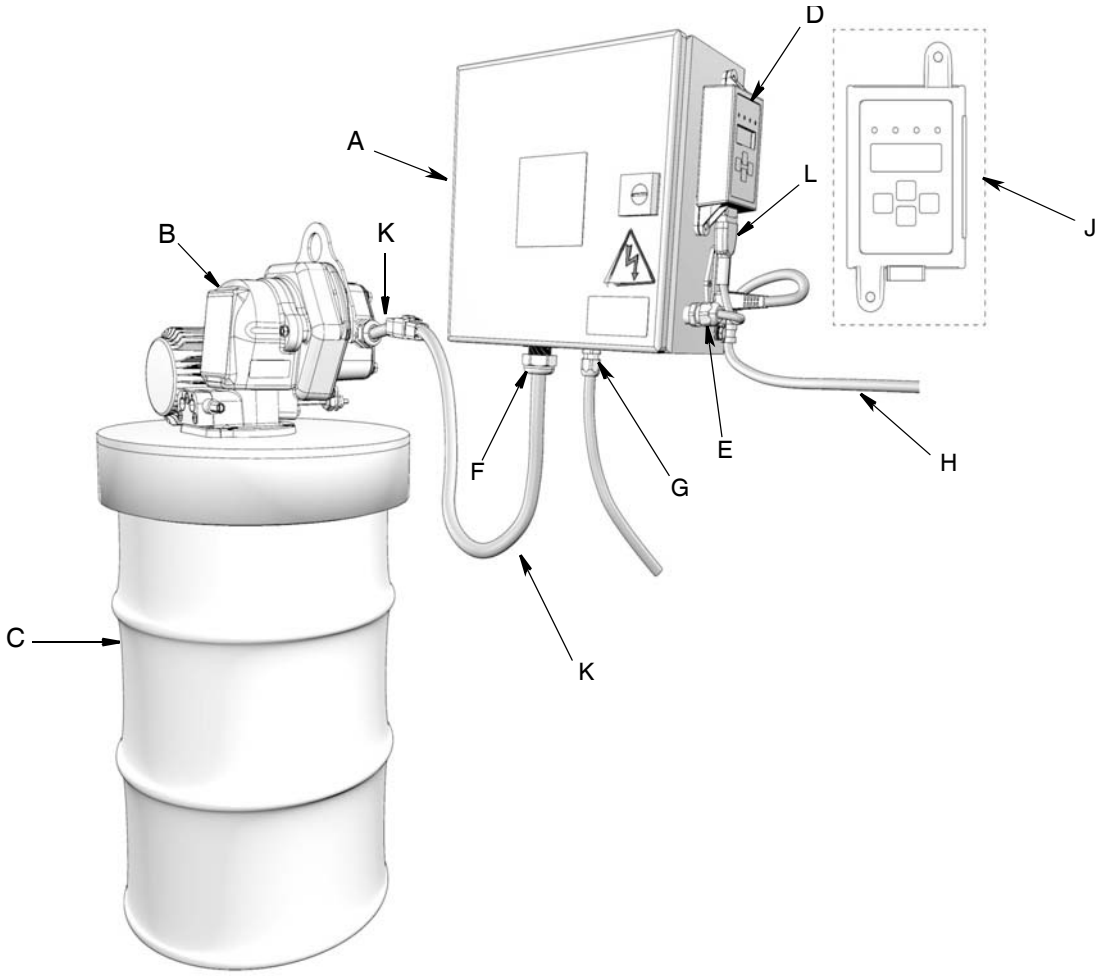
- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** in you pump manual when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eye wear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturers.

Typical Installation



A AC to DC Kit Enclosure
B Dyna-Star Pump*
C Fluid Drum*
D GLC2200* (24N468)
E GLC2200 Connector
F Cable Gland Kit (77X533)
G Pressure Switch Connection (Optional)
H Power Cord - 9 feet (2.7 meters)
J GLC2200* (wall installation)
K Electric Dyna-Star Power Cord and Cable Kits* (77X527, 77X528)
L GLC2200 Cable* (24P686)

**User supplied*

Installation

Dyna-Star Pump Current Control Adjustment

NOTE: The Dyna-Star Pump is designed to draw 40 Current Amps. The AC to DC conversion kit is only designed for 20 Current Amps. The current control must be adjusted on the Dyna-Star Motor Control Board for 20 Current Amps. The Dyna-Star pump will not run efficiently if this adjustment is not made.

1. Disconnect power to Dyna-Star pump.
2. On Dyna-Star pump, remove screws (116) from motor control box cover (120) and remove cover and gasket (119) (FIG. 1).

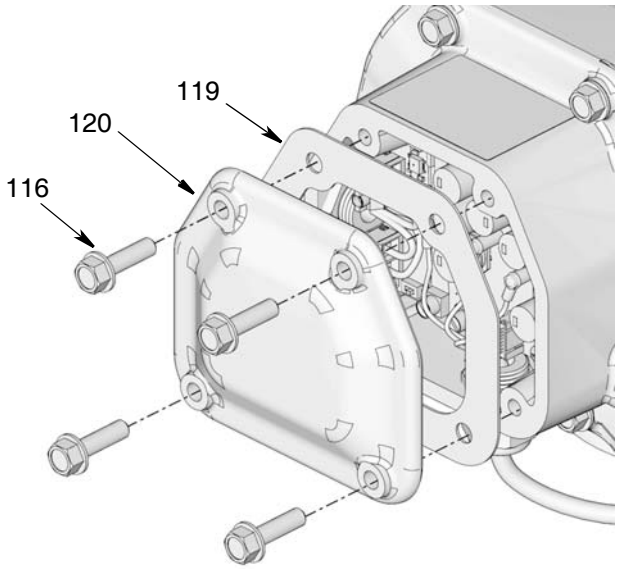


FIG. 1

3. Turn current control potentiometer knob counter-clockwise to decrease the Amp setting value to the setting shown in FIG. 2.

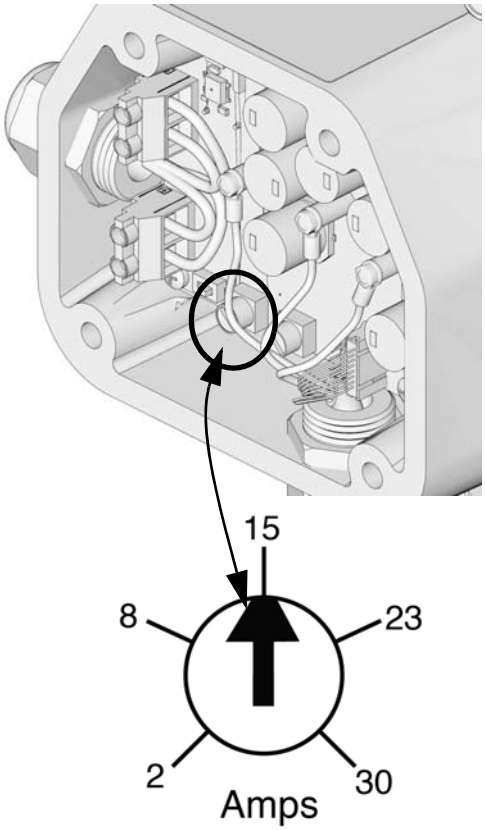


FIG. 2

4. Replace motor control board gasket (119) and cover (120) with screws (116) (FIG. 3) being careful not to pinch any wires. Tighten bolts securely. Torque to 17 - 19 ft lbs (23 - 25 N.m).

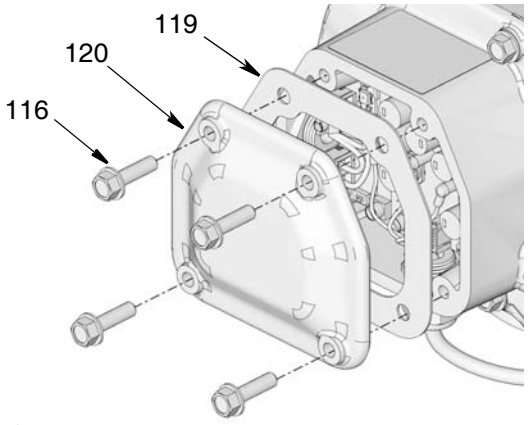


FIG. 3

Enclosure Preparation

- Select a flat surface near the Dyna-Star pump to install the Enclosure (1).
- Enclosure Mounting Dimensions are provided on page 15 of this manual. They are provided for reference only and to use as a guide for pre-drilling holes.
- 3 cord grips are included in the kit.
  - 2 cord grips (12) are used for controller interface and pressure switch.
  - 1 cord grip (10) is used for power to the Dyna-Star pump.
  - Determine the location on the Enclosure box (1) that best suits your application and add holes in the box accordingly.

Controller Cord Grip Installation

- Cord Grip (12) (included in the kit) will accommodate a cable with an outside diameter of 0.230 in. - 0.395 in. (5.8 mm - 10.0 mm). If the outside diameter of your controller cord is not within this range, an appropriately sized cord grip must be used.
- Cord Grip (12) (included in kit) is used for installing the GLC2200 Wiring Harness (24P314) in the Enclosure (1).
- For your convenience and reference, Mounting Dimensions are provided on page 16 of this manual. Install the cord grip in a location that is the most efficient for your installation location.

1. Determine the best path for the wiring cable between the controller and Enclosure (1).
2. Use a 3/4 inch (19 mm) drill bit to create the hole to install Cord Grip (12) in the Enclosure (1).

   NOTE: If a different sized cord grip is used an appropriately sized drill bit must be used to create the installation hole.
3. Deburr the hole to remove sharp edges.
4. Install cord grip through drilled hole in Enclosure (1). Install lock nut on the inside of the Enclosure, over threaded end of cord grip. Tighten nut securely to hold cord grip in place. Torque nut to 5.9 ft. lbs (8 N.m).
5. Feed the end of the controller wiring harness (c) through the cord grip and into the inside of the Enclosure (1) as shown in FIG. 4. Tighten compression nut and torque to 5.5 ft. lbs (7.5 N.m).

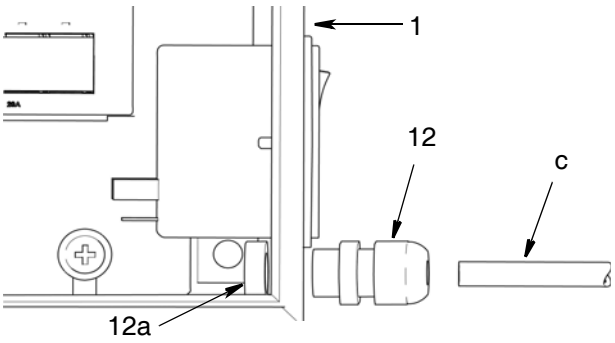


FIG. 4

Pressure Switch Cord Grip (Optional)

- Cord Grip (12) (included in the kit) will accommodate a cable with an outside diameter of 0.230 in. - 0.395 in. (5.8 mm - 10.0 mm). If the outside diameter of your pressure switch cord is not within this range, an appropriately sized cord grip must be used.
- Cord Grip (12) is used for installing the Pressure Switch Wiring Harness in the Enclosure (1).
- For your convenience and reference, Mounting Dimensions are provided on page 16 of this manual. Install the cord grip in a location that is the most efficient for your installation location.

1. Determine the best path for the wiring cable between the Dyna-Star Pump and the Enclosure (1).
2. Use a 3/4 inch (19 mm) drill bit to create the hole to install Cord Grip (12) in the Enclosure (1).

   NOTE: If a different sized cord grip is used an appropriately sized drill bit must be used to create the installation hole.
3. Deburr the hole to remove sharp edges.
4. Install cord grip through drilled hole in Enclosure (1). Install lock nut on the inside of the Enclosure, over threaded end of cord grip. Tighten nut securely to hold cord grip in place. Torque nut to 5.9 ft. lbs (8 N.m).
5. Feed the wires through the cord grip and into the inside of the Enclosure (1). Tighten compression nut and torque to 5.5 ft. lbs (7.5 N.m).

Electric Dyna-Star Cord Grip

- Cord Grip(10) (included in the kit) will accommodate a cable with an outside diameter of 0.350 in. - 0.63 in. (9 mm - 16 mm). If the outside diameter of your pump cable is not within this range, an appropriately sized cord grip must be used.

- Cord Grip (10) included in kit) is used for installing the Dyna-Star pump cord (77X528) in the Enclosure (1).

- For your convenience and reference, Mounting Dimensions are provided on page 16 of this manual. Install the Cable Gland (10) in a location that is most efficient for your installation location.

1. Determine the best path for the wiring cable between the Dyna-Star Pump and the Enclosure (1).

2. Use a 1 inch (25 mm) drill bit to create a hole to install the Cable Gland Kit (10).

   NOTE: If a different sized cord grip is used an appropriately sized drill bit must be used to create the installation hole.

3. Deburr the hole to remove sharp edges.

4. Install cable gland in drilled hole in Enclosure (1). Install lock nut (11) on the inside of the enclosure, over threaded end of cable gland. Tighten nut securely to hold cable gland in place. Torque nut to 5.1 ft. lbs (7 N.m).

5. Feed the end of the pump wiring harness (e) through the cable gland and into the inside of the Enclosure (1) as shown in FIG. 5. Tighten compression nut and torque to 3.7 ft. lbs (5 N.m).

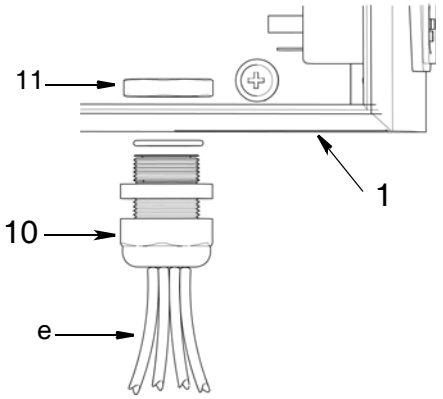


FIG. 5

Controller Installation

NOTE:

- The following instructions are specifically written for installing a Graco GLC2200 Controller. These instructions may be modified or may be unnecessary if you are using a different type of controller or a PLC with your system.

- For your convenience, Controller Mounting Dimensions for a Graco GLC2200 are provided on page 15 of this manual. They are provided for reference only. Install the Controller in a location that is the most efficient for your installation location.

GLC2200

Graco recommends installing the GLC2200 directly to the side of the Enclosure (1). If that type of installation is not feasible for your location, it can also be mounted securely to a flat surface as close as possible to the Enclosure (see Typical Installation option J, page 3).

NOTE: The GLC2200 wiring harness cord is 5 feet long.

- If the GLC2200 is installed to the side of the Enclosure (1) the wiring harness cord must be trimmed to remove the excess length.

- If the GLC2200 is not mounted directly onto the side of the Enclosure (1), be sure the mounting location selected is close enough to the Enclosure to allow sufficient cord length between the GLC2200 and the connection points inside the Enclosure.

- Always pre-drill mounting holes in the Enclosure (1) or your installation location.

  Before drilling the mounting holes:

  - Use the mounting hole dimensions provided in the GLC2200 instruction manual as a guide to pre-drill mounting holes

    or,

  - Mark the location of the two mounting holes by positioning the GLC2200 Controller on the installation location. Mark the location of each mounting hole with a pencil.

For GLC2200 Controller installations on the side of the Enclosure (1):

NOTICE

To prevent damaging and/or contaminating the GLC2200 Controller while pre-drilling the other holes in the Enclosure (1), do not install the GLC2200 controller to the side of the Enclosure until all mounting holes are drilled.

GLC2200 Installation

1. Align the GLC2200 Controller with the pre-drilled mounting holes on the Enclosure (1) or alternate mounting surface.
2. Use two screws (not provided) to secure the GLC2200 controller to the mounting surface.

   NOTE: GLC220 installation on the Enclosure (1) is shown in FIG. 6.

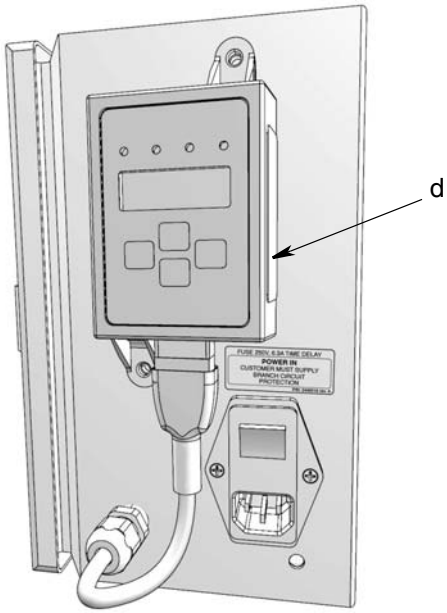


FIG. 6

3. Plug the large connector end (d) of the GLC2200 wiring harness into the GLC2200 as shown in FIG. 6. The connector can only be plugged into the GLC2200 one way. The clip should be facing to the back (or down) when the connector is correctly oriented.

Installing Enclosure to Mounting Surface

Install Enclosure (1) to mounting surface by aligning the holes (f) in the enclosure box with the pre-drilled holes.

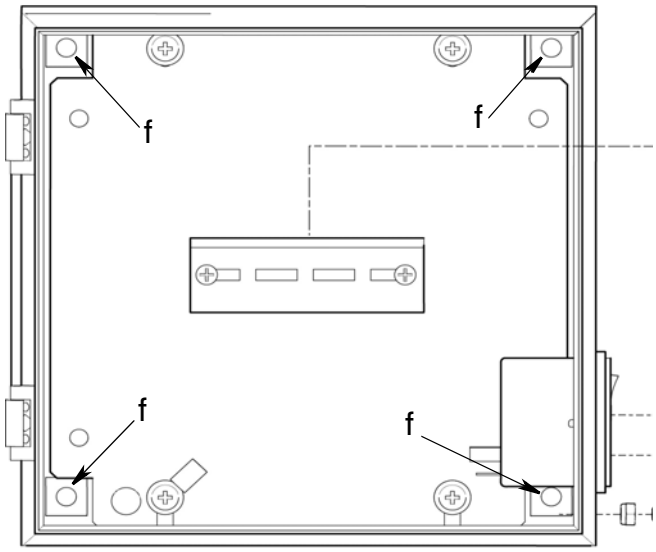


FIG. 7

Fuse Installation

NOTICE

Fuses are required. To avoid equipment damage:

- Never operate the Dyna-Star pump without a fuse installed.
- A fuse of the correct voltage must be installed in line with the power entry to the system.

A 6.3 Amp Fuse Kit, 16Y312 is available from Graco. Discard unused fuses according to applicable local disposal guidelines

1. Use a flat blade screwdriver to remove fuse box (f) located under switch as shown in FIG. 8.

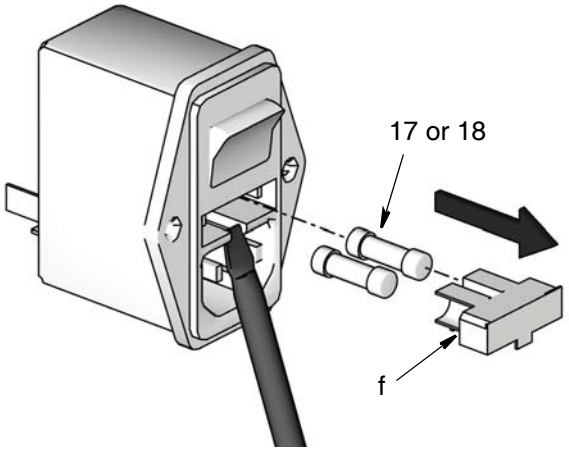


FIG. 8

2. Install 2 fuses (17 or 18) of the same amperage in the fuse box.

NOTICE

To prevent breaking fuses during installation, do not force the silver capped end of the fuse through the fuse seat opening.

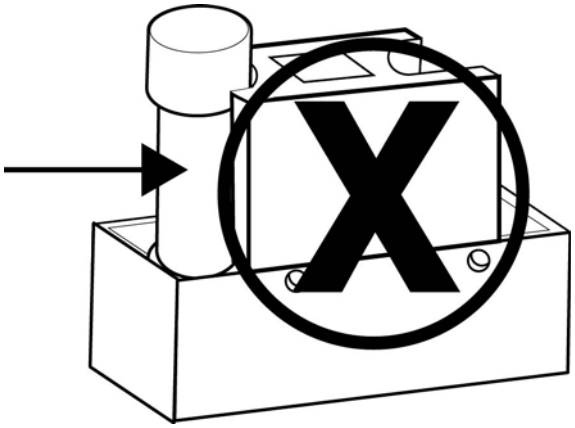


FIG. 9

a. Insert the silver-capped end of fuse (17 or 18) into bottom of fuse box (g) as shown in FIG. 10.

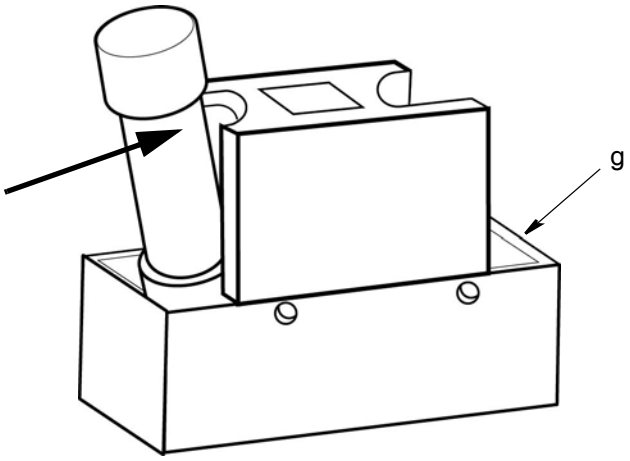


FIG. 10

b. With the silver cap above the top of the fuse box, gently push the glass tube into fuse seat as shown in FIG. 10.

c. Gently push down on the top silver fuse cap to securely hold the fuse in the seat as shown in FIG. 11.

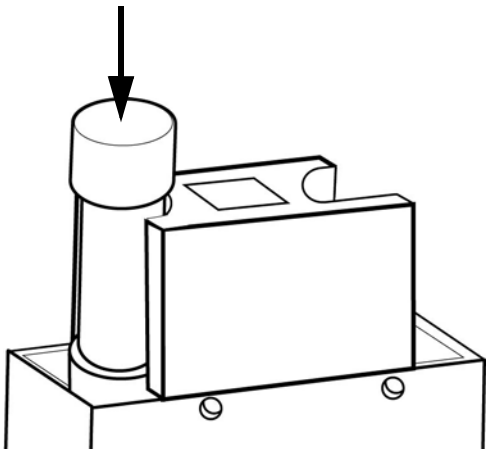


FIG. 11

3. Reinstall fuse box under switch (3).

System Configuration and Wiring

Improper installation may result in a risk of electric shock. All electric wiring must be done by a qualified electrician and comply with all local codes and regulations.

If the product is permanently connected, it must be connected to a grounded power source.

If an attachment plug is required in the end use application:

- it must be rated for the product electrical specifications.
- it must be an approved, 3-wire grounding type attachment plug.
- it must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Connecting Power Supply

1. To secure power supply to DIN rail, hook clips on power supply (16) into DIN rail (7) (FIG. 12). Push down firmly on lower edge of power supply until you hear a click.

2. Gently pull up on the bottom edge of the power supply (16) to verify it is securely in place.

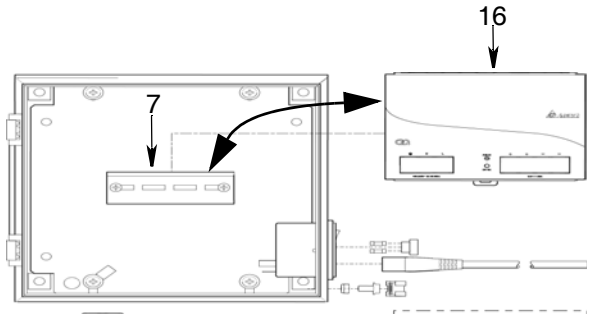


FIG. 12

3. Connect wiring harness (6) (FIG. 13) to AC input terminals on power supply (16).

    - Black wire - line (L)
    - White wire - neutral (N)
    - Green/yellow wire - ground / earth

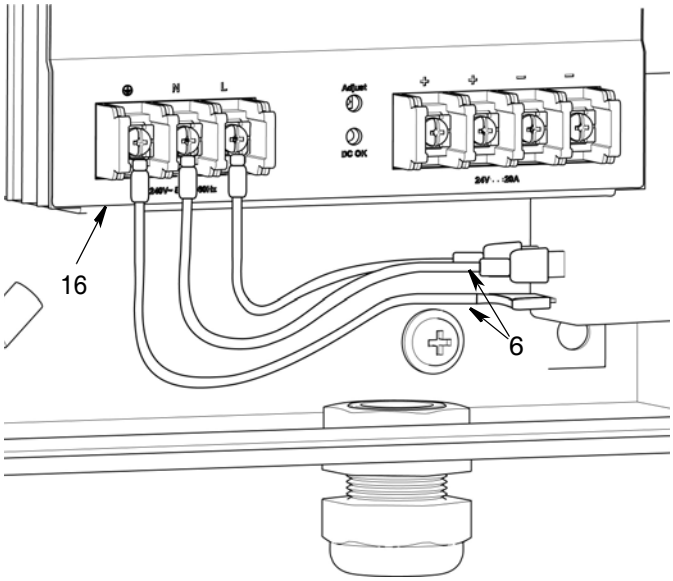


FIG. 13

Dyna-Star Pump and Controller Connections

1. Remove 2 to 3 inches of the outer insulation (h) from bare end of the cable as shown FIG. 14.

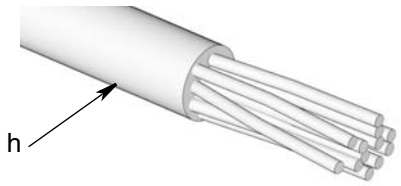


FIG. 14

2. Strip each wire (j) as shown in FIG. 15.

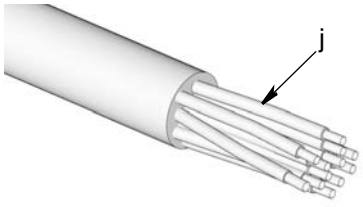


FIG. 15

3. Connect Red (+/rd) and Black (-/bl) wires from Dyna-Star Cable and Controller Wiring Harness to the corresponding + and - marked DC output terminals on the power supply (16) (see FIG. 16).

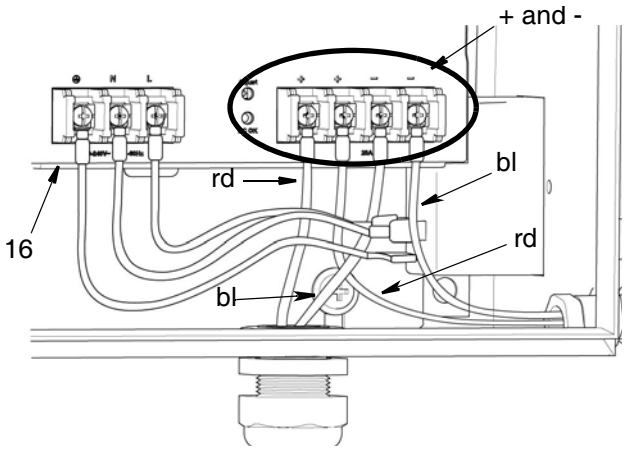


FIG. 16

Controller Connections

NOTE: Use the LEVER-NUTS® (26) included in this kit to make all controller wiring connections. Instructions for using these LEVER-NUTS® are provided in the following section of this manual titled: **LEVER-NUTS®**.

GLC2200

Refer to the GLC2200 Lubrication Controller instruction manual and GLC2200 Wiring Connector Kit instruction manual wiring harness installation instructions.

User Supplied Controller

Refer to the Instruction Manual included with your Controller for instructions related to the wiring harness connections.

LEVER-NUTS®

Use a LEVER-NUTS® (26) to connect wires.

1. Strip approximately 0.37 inches (9-10 mm) of insulation from the end of each wire.

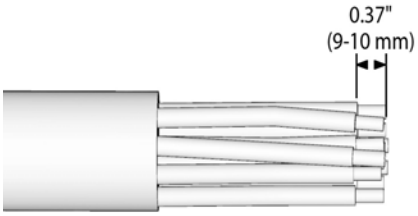


FIG. 17

2. Push up lever (26a) on LEVER-NUTS® (26).

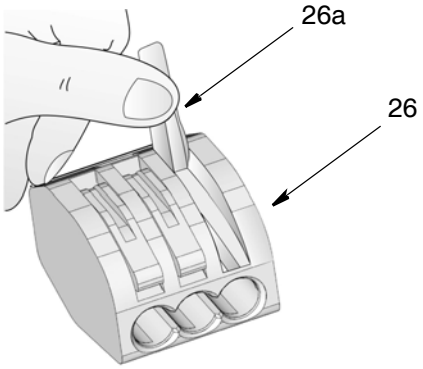


FIG. 18

3. Insert stripped end of wire into LEVER-NUTS® and push down lever (26a).

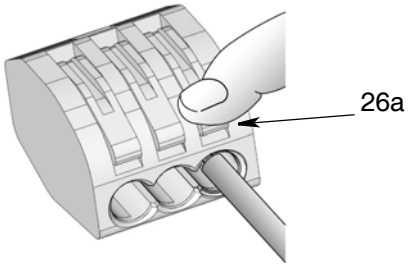


FIG. 19

4. Push LEVER-NUTS® and wires neatly inside enclosure, taking care to not crimp or pinch them when enclosure door is closed.

NOTE: Depending on your application, all wires included in the wiring harness may not be used. Blunt cut the end of each unused wire and wrap it with electric tape to prevent exposed wires from making contact with any other wire.

FIG. 20

Installing Power Cord Clamp

1. Verify power to the system is disconnected and that the power switch (3) is in the OFF position as shown in FIG. 21.

2. To determine the position to install the power cord clamp (25) around the power cord, plug power cord

plug (13) into the connector (3a) located below the switch (3).

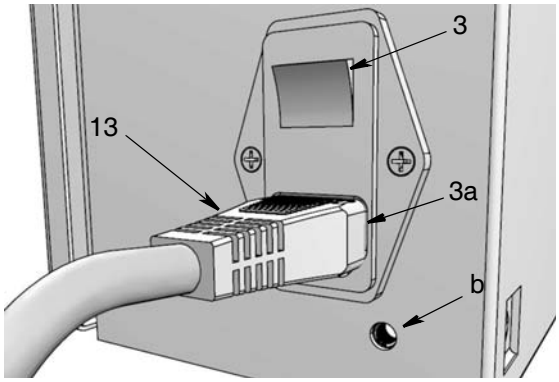


FIG. 21

3. Position clamp around the cord near the plug and mounting clamp installation hole (b).

NOTE: The clamp (25) should be installed close enough to the power cord plug end to prevent the plug from loosening itself from the connector (3a) when pulled; resulting in an interruption or loss of power to the controller. See FIG. 22.

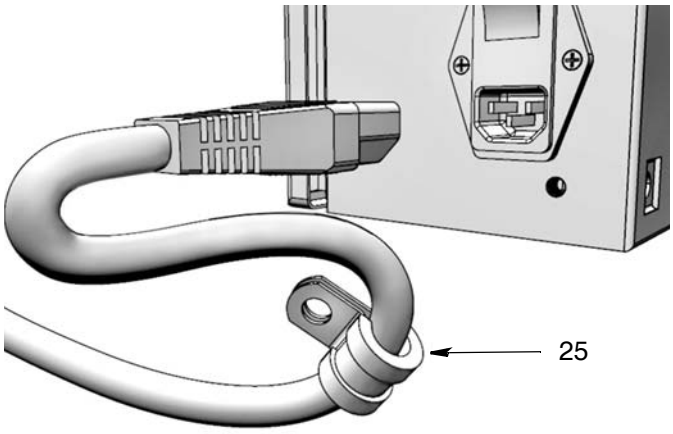


FIG. 22

4. Unplug the power cord plug (13) from connector (3a) (FIG. 22).

5. Insert screw (24) through the two silver tabs (25a) on the cord clamp (FIG. 23). Then install screw through the installation hole in the enclosure.

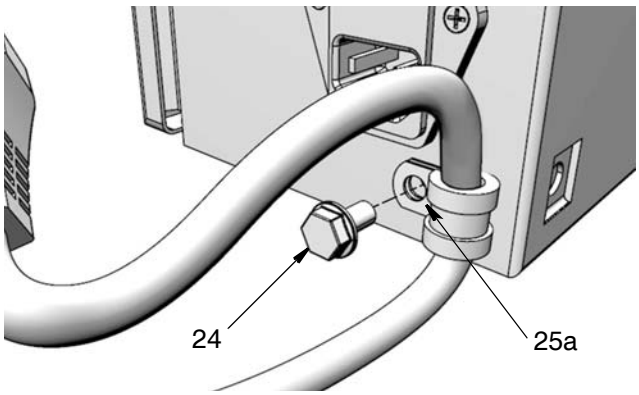


FIG. 23

6. Install nut (23) over end of screw (24) on the inside of the Enclosure (1) (FIG. 24). Use two wrenches (one on the nut and one on the screw head) to securely tighten nut and power cord clamp (25) to the Enclosure (1).

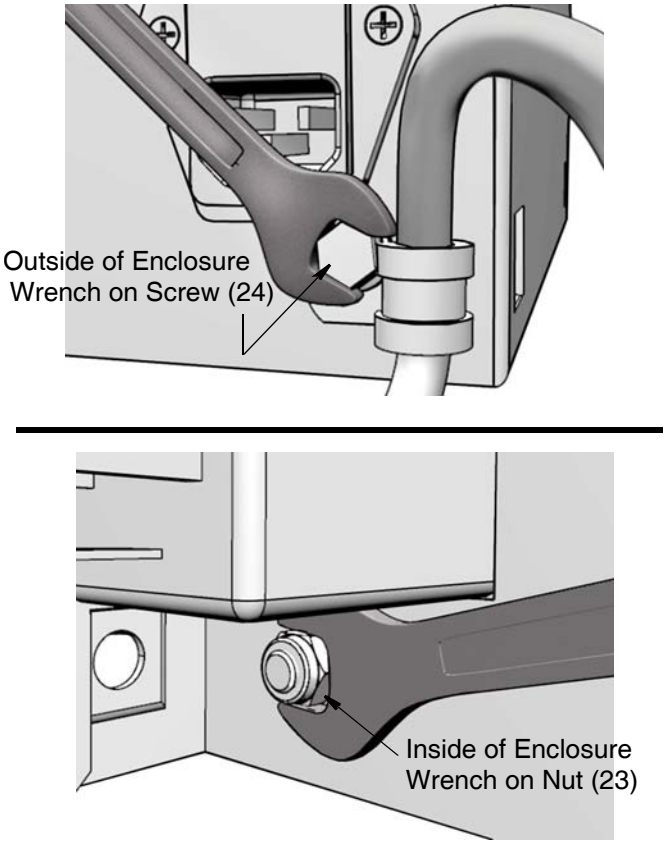
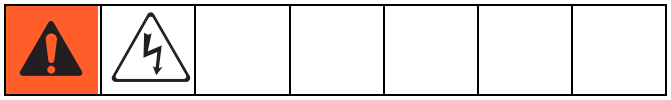


FIG. 24

Installing Power Cord



1. Verify power at the main power source is disconnected and that the correct amperage circuit breaker for the input voltage is installed.
2. Hard wire or install a plug to the bare end of power cord (13). Be sure to connect wires to the correct polarity:
   - Brown wire - line (L)
   - Blue wire - neutral (N)
   - Green/yellow wire - ground / earth
3. Verify power switch (3) is in the OFF position.
4. Plug power cord plug (13) into connector (3a) located below switch (3).
5. Connect power at main power source.
6. Turn power switch to ON as shown in FIG. 25.

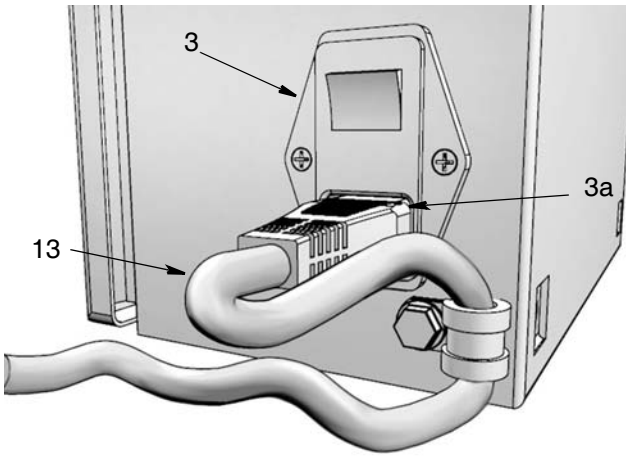


FIG. 25

Kit 77X524 Parts

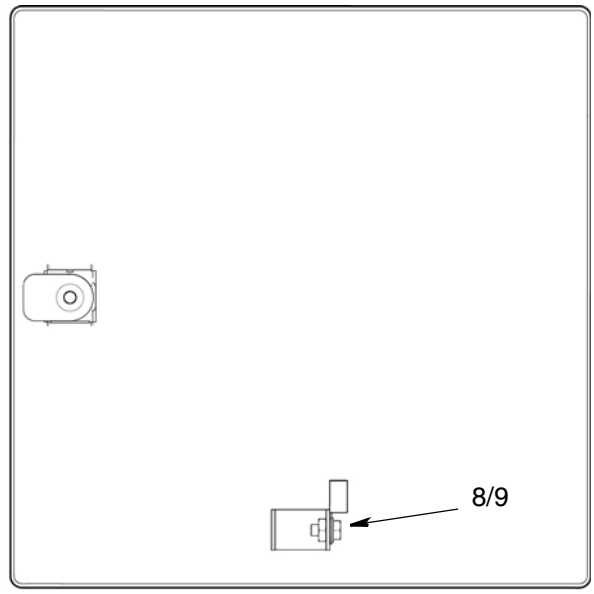
Ref	Part No.	Description	Qty
1		BOX, enclosure	1
2		PANEL, enclosure, back	1
3		SWITCH, power, 120/240V	1
4		SCREW, mach, flh (not shown)	2
5		NUT, lock, hex (not shown)	2
6		HARNESS, filter, power supply (not shown)	1
7		RAIL, mounting, DIN, 4 in. long	1
8		SCREW, grounding	1
9		NUT, keps, hex head	1
10	77X533	KIT, cable gland, includes 11	1
11		NUT, cable gland	1
12	121036	GRIP, cord, includes 12a	2
12a		NUT, lock	2
13		CORD, power, IEC	1
14▲	186620	LABEL, ground symbol	1
15		SCREW, machine, pnh	2
16		POWER SUPPLY, 24 volt	1
18†	16Y312	FUSE, 6.3 AMP, 110 volt (not shown)	2
19▲	196548	LABEL, warning, shock	1
21		WASHER, #8, plain flat	1
23		NUT, hex	1
24		SCREW, hex head	1
25		CLAMP	1
26		LEVER-NUTS® (not shown)	10
27▲		LABEL, instructions, power supply (see Side View, page 16 for label location)	1

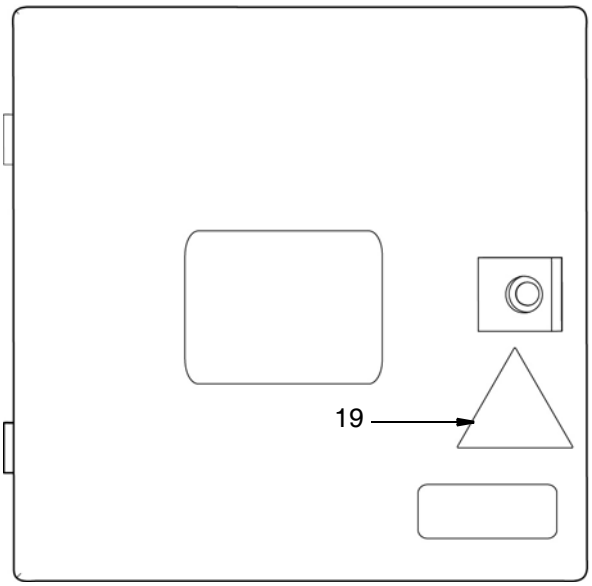
LEVER-NUTS® is a Registered Trademark of WAGO Corporation.

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

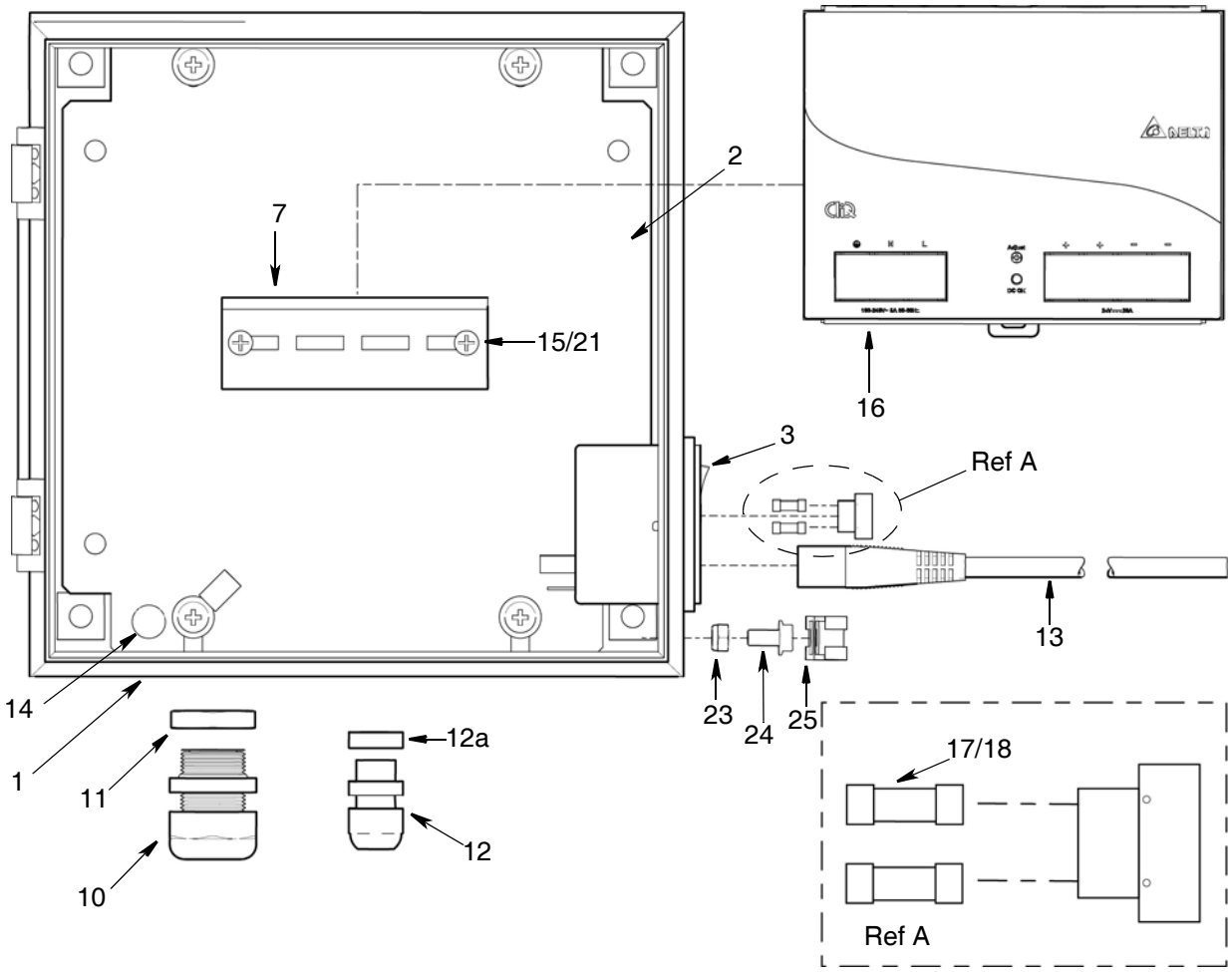
† *Use fuses of the correct Amperage for your installation location. Discard unused fuses according to applicable disposal regulations.*

Enclosure (1) Parts





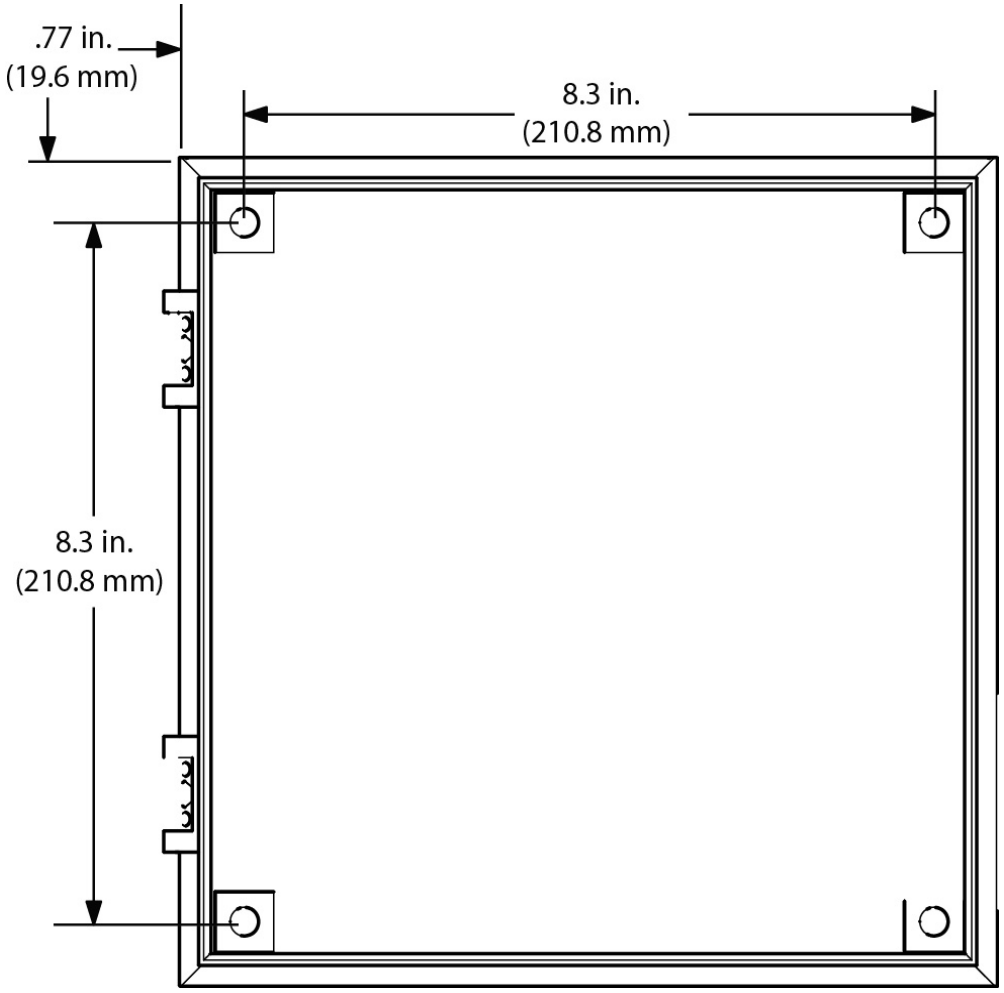
Kit 77X524 Inside Enclosure (1) Parts



Technical Data

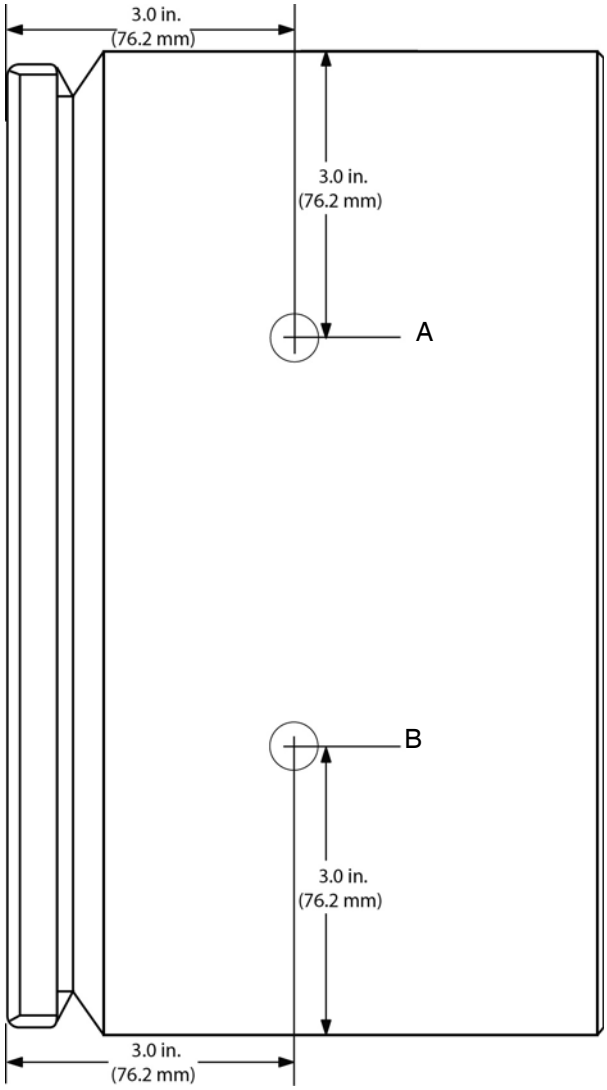
Dyna-Star HP and HF Pump AC to DC Conversion Kit		
	US	**Metric**
Input Voltage	110-240V AC	
Input Frequency	50/60 Hz	
Output Voltage	24V DC	
Output Current	20AMPS	
IP Rating	IP24	
Environmental temperature range	14° to 122°F	-10° to 50°C
Power Cord Length	9 feet	2.7 meters

Enclosure (1) Mounting Dimensions

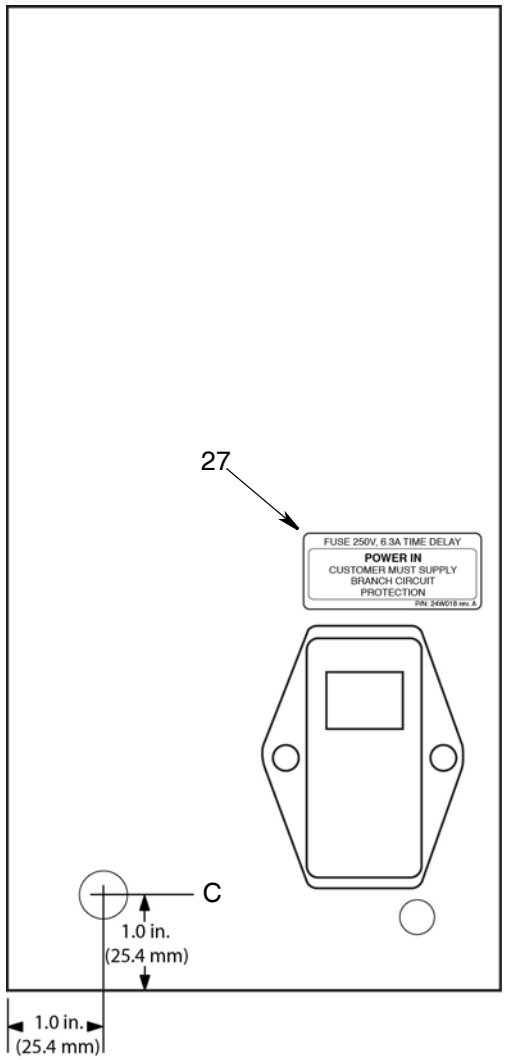


Cord Grip/Cable Gland Dimensions

Bottom View



Side View



Key:

A Electric Dyna-Star Cable
B Any other cable such as Pressure Switch
C GLC2200 Cable

Notes

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS
The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.
Phone: 612-623-6928 **or Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 333391
Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

Copyright 2014, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.

www.graco.com
April 2014, revised June 2014